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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/555,041

10/27/2005

Kiyoshi Yamaguchi

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2755

23432 7590 02/25/2008
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EXAMINER

AL HASHIMI, SARAH

ART UNIT

PAPER NUMBER

2853

MAIL DATE

DELIVERY MODE

02/25/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/555,041	YAMAGUCHI ET AL.	
	Examiner	Art Unit	
	SARAH AL HASHIMI	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 11-13 is/are pending in the application.
- 4a) Of the above claim(s) 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 11-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1,11,12 in the reply filed on 11/21/2007 is acknowledged.
2. Claim 13 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/21/2007.
3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
5. Claim 1,11,12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seto (US 2001/0055051) in view of Takeuchi (US 6,351,056).

Seto teaches:

Claim 1: a nozzle configured to discharge a liquid drop by using a piezoelectric element; wherein the piezoelectric element is a stacked layer type piezoelectric element formed by reciprocally stacking a piezoelectric layer and an inside electrode layer (fig 1).

Claim 11: a liquid drop discharge head configured to discharge a liquid drop; wherein the liquid drop discharge head includes a nozzle configured to discharge the liquid drop by using a piezoelectric element, the piezoelectric element is a stacked layer type piezoelectric element formed by reciprocally stacking a piezoelectric layer and an inside electrode layer (fig 1).

Claim 12: a liquid drop discharge head configured to discharge the liquid drop; wherein the liquid drop discharge head includes a nozzle configured to discharge the liquid drop by using a piezoelectric element, and the piezoelectric element is a stacked layer type piezoelectric element formed by reciprocally stacking a piezoelectric layer and an inside electrode layer (fig 1).

Seto does not teach but Takeuchi teaches:

Claim 1: the piezoelectric layer is formed by a piezoelectric material not including lead but having bismuth sodium titanate, as main ingredients, the piezoelectric material having a sintering temperature equal to or less than 1200°C (col 25 line 24-30 "Specific piezoelectric/electrostrictive materials arebarium titanate, sodium bismuth titanate, ... and the like, and they may be respectively used individually and col 33 lines 55-8 "a piezoelectric/electrostrictive element can be formed in a method where a ceramic green laminated body 108 is sintered at a predetermined conditions, preferably at a temperature of 1200..degree").

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Claim 11: the piezoelectric layer is formed by a piezoelectric material not including lead but having bismuth sodium titanate, as main ingredients, the piezoelectric material having a sintering temperature equal to or less than 1200°C (col 25 line 24-30 “Specific piezoelectric/electrostrictive materials arebarium titanate, sodium bismuth titanate, ... and the like, and they may be respectively used individually” and col 33 lines 55-8 “a piezoelectric/electrostrictive element can be formed in a method where a ceramic green laminated body 108 is sintered at a predetermined conditions, preferably at a temperature of 1200..degree”).

Claim 12: the piezoelectric layer is formed by a piezoelectric material not including lead but having bismuth sodium titanate as main ingredients, the piezoelectric material having a sintering temperature equal to or less than 1200 °C (col 25 line 24-30 “Specific piezoelectric/electrostrictive materials arebarium titanate, sodium bismuth titanate, ... and the like, and they may be respectively used individually” and col 33 lines 55-8 “a piezoelectric/electrostrictive element can be formed in a method where a ceramic green laminated body 108 is sintered at a predetermined conditions, preferably at a temperature of 1200..degree”).

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Seto to incorporate the piezoelectric layer is formed by a piezoelectric material not including lead but having bismuth sodium titanate, as main ingredients, the piezoelectric material having a sintering temperature equal to or less than 1200°C as taught by Takeuchi because of the quality of such a material and its ability to withstand temperatures of 1200°C.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SARAH AL HASHIMI whose telephone number is (571)272-7159. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272 2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SA/

/An H. Do/

Primary Examiner, Art Unit 2853